

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Currently Amended) An image processing apparatus comprising:
input means for inputting color image data;
~~first storage means for storing the color image data;~~
generating means for generating flag data indicating an attribute of
an image corresponding to the color image data from the color image data;
~~second storage means for storing the generated flag data;~~
~~compressing means for compressing the image data stored in said~~
~~first storage means and the flag data stored in said second storage means;~~
~~third storage means for storing the image data and flag data~~
compressed by said compressing means;
~~decompressing means for decompressing the image data and flag~~
~~data read out from said third storage means;~~
first pixel density converting means for pixel density converting the
image data ~~decompressed by said decompressing means~~ at a designated magnification;
second pixel density converting means for pixel density converting
the flag data ~~decompressed by said decompressing means at same magnification as in~~
accordance with the designated magnification; and

output means for making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data,

wherein said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction, and performs a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

2. (Currently Amended) An apparatus according to claim 1, wherein said the flag data is a character flag indicative of a character image, a figure flag indicative of a figure image, and a mesh flag indicative of a mesh image.

3. (Currently Amended) An apparatus according to claim 1, wherein when said the flag data is a character flag, said output means performs a sharpness emphasis to said the image data.

4. (Currently Amended) An apparatus according to claim 1, wherein when said the flag data is a mesh flag, said output means performs a low pass filter process to said the image data.

5. and 6. (Canceled)

7. (Original) An apparatus according to claim 1, wherein said generating means generates the flag data on the basis of a change in image data of a pixel near a target pixel.

8. (Original) An apparatus according to claim 1, wherein said first pixel density converting means uses one of a linear interpolating method and bicubic spline interpolation.

9. (Canceled)

10. (Original) An apparatus according to claim 2, wherein said output means makes a binarizing process to the image data different in accordance with the flag data.

11. (Currently Amended) An apparatus according to claim 10, wherein when said the flag data is the character flag or figure flag, an error diffusion process is performed to the image data.

12. (Original) An apparatus according to claim 1, wherein said output means changes color conversion coefficients in accordance with the flag data and performs a color converting process of the image data.

13. (Canceled)

14. (Original) An apparatus according to claim 1, wherein in the case where said input means inputs data described by a page description language from a computer, said generating means generates the flag data on the basis of attribute information of the page description language.

15. (Currently Amended) An apparatus according to claim 1, wherein said second pixel density converting means makes a converting method different in accordance with attributes of said the flag data.

16. (Currently Amended) An image processing apparatus according to ~~claim 15~~ comprising:

input means for inputting color image data;
generating means for generating flag data indicating an attribute of
an image corresponding to the color image data from the color image data;
first pixel density converting means for pixel density converting the
image data at a designated magnification;
second pixel density converting means for pixel density converting
the flag data in accordance with the designated magnification; and

output means for making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data,

wherein said second pixel density converting means ~~switches~~ a logical arithmetic operating process of flag values of a plurality of pixels near a target pixel, a process using a nearest neighboring pixel of the target pixel, and a process using a result obtained by counting flag data around the near pixels makes a converting method different in accordance with attributes of the flag data.

17. (Currently Amended) An image processing method comprising the steps of:

inputting color image data;
storing the inputted color image data into first storage means;
generating flag data indicating an attribute of an image corresponding to the color image data from the color image data;
storing the generated flag data into second storage means;
compressing the image data stored in said first storage means and the flag data stored in said second storage means;
storing the compressed image data and the compressed flag data into third storage means;
decompressing the image data and flag data read out from said third storage means;

pixel density converting the ~~decompressed~~ image data at a designated magnification;

pixel density converting the ~~decompressed~~ flag data at same magnification as in accordance with the designated magnification; and making a process of the pixel density converted image data different every pixel in accordance with ~~said the~~ flag data and outputting the processed image data to a printer,

wherein said step of pixel density converting the flag data includes performing a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction, and performing a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

18. (Currently Amended) A computer-readable storage medium which stored stores a program for allowing an image processing apparatus to execute said program comprising the steps of:

inputting color image data;
~~storing said inputted color image data into first storage means;~~
generating flag data indicating an attribute of an image according corresponding to the color image data from the color image data;
~~storing the generated flag data into second storage means;~~

compressing the image data stored in said first storage means and the flag data stored in said second storage means;

storing the compressed image data and the compressed flag data into third storage means;

decompressing the image data and flag data read out from said third storage means;

pixel density converting the decompressed image data at a designated magnification;

pixel density converting the decompressed flag data at same magnification as in accordance with the designated magnification; and

making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data to a printer,

wherein said step of pixel density converting the flag data includes performing a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction, and performing a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

19. (Currently Amended) An image processing apparatus method comprising:

~~reading means for color separating an original image and reading as
color digital signals of each pixel;~~

~~an input means for step, of inputting color image data described by a
page description language from a computer;~~

~~analyzing means for analyzing data inputted by said input means,
rasterizing said data into image data in a bit map format, and generating attribute
information of the rasterized image data as flag data;~~

~~first storage means for temporarily storing the read color image
signals of R, G, and B and the image data in the bit map format rasterized by said analyzing
means;~~

~~detecting means for detecting a feature amount of each pixel of the
original image in parallel with the reading operation of the original by said reading means;~~

~~a generating means for step, of generating flag data for identifying
indicating an attribute of the pixel from the detected feature amount an image
corresponding to the color image data from the color image data;~~

~~second storage means for storing the flag data generated by said
generating means and the flag data generated by said analyzing means;~~

~~a first pixel density converting means for step, of pixel density
converting said the image data at a designated magnification;~~

~~a second pixel density converting means for step, of pixel density
converting said the flag data in accordance with the designated magnification at a same
magnification as the designated magnification; and~~

~~control means for reading out the image data stored in said first storage means and the flag data stored in said second storage means, converting pixel densities of said read-out data by said first and second pixel density converting means, and thereafter, processing the image data on a pixel unit basis in accordance with the flag data; transferring the processed image data to a printer, and allowing said printer to form a color image~~

an output step, of making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data.

wherein said second pixel density converting step includes making a converting method different in accordance with attributes of the flag data.

20. (New) A computer-readable storage medium which stores a program for achieving an image processing method comprising:

an input step, of inputting color image data;
a generating step, of generating flag data indicating an attribute of an image corresponding to the color image data from the color image data;
a first pixel density converting step, of pixel density converting the image data at a designated magnification;
a second pixel density converting step, of pixel density converting the flag data in accordance with the designated magnification; and

an output step, of making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data,

wherein said second pixel density converting step includes making a converting method different in accordance with attributes of the flag data.

21. (New) An image processing apparatus comprising:
 - input means for inputting color image data;
 - generating means for generating flag data indicating an attribute of an image corresponding to the color image data from the color image data;
 - first pixel density converting means for pixel density converting the image data at a designated magnification;
 - second pixel density converting means for pixel density converting the flag data in accordance with the designated magnification; and
 - output means for making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data,
- wherein said first pixel density converting means gives an offset to a start position of an output pixel position so that an output pixel value after pixel density converting the image data is generated by interpolation calculation between the neighboring adjacent pixels.

22. (New) An image processing method comprising:

an input step, of inputting color image data;

a generating step, of generating flag data indicating an attribute of an image corresponding to the color image data from the color image data;

a first pixel density converting step, of pixel density converting the image data at a designated magnification;

a second pixel density converting step, of pixel density converting the flag data in accordance with the designated magnification; and

an output step, of making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data,

wherein said first pixel density converting step includes giving an offset to a start position of an output pixel position so that an output pixel value after pixel density converting the image data is generated by interpolation calculation between the neighboring adjacent pixels.

23. (New) A computer-readable storage medium which stores a program for achieving an image processing method comprising:

an input step, of inputting color image data;

a generating step, of generating flag data indicating an attribute of an image corresponding to the color image data from the color image data;

a first pixel density converting step, of pixel density converting the image data at a designated magnification;

a second pixel density converting step, of pixel density converting the flag data in accordance with the designated magnification; and

an output step, of making a process of the pixel density converted image data different every pixel in accordance with the flag data and outputting the processed image data,

wherein said first pixel density converting step includes giving an offset to a start position of an output pixel position so that an output pixel value after pixel density converting the image data is generated by interpolation calculation between the neighboring adjacent pixels.